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Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons

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Addressing "Vienna issues": the Comprehensive Nuclear-Test-Ban Treaty; compliance and verification; export controls; cooperation in the peaceful uses of nuclear energy; nuclear safety; nuclear security; and discouraging withdrawal from the Treaty on the Non-Proliferation of Nuclear Weapons

Working paper submitted by Australia, Austria, Canada, Denmark, Finland, Hungary, Ireland, the Netherlands, New Zealand, Norway and Sweden (the Vienna Group of Ten)

1. The Vienna Group of Ten reconfirms its full commitment to the Treaty on the Non-Proliferation of Nuclear Weapons. The Non-Proliferation Treaty is the cornerstone of the international nuclear disarmament and non-proliferation regime and fundamentally contributes to international peace, stability and security. The Vienna Group of Ten places great importance on the universalization of the Treaty, and encourages all States that have not yet acceded to the Treaty to do so as soon as possible.

2. The Non-Proliferation Treaty plays a unique role in providing a framework that fosters international confidence and cooperation in the peaceful uses of nuclear energy. By aiming to ensure that nuclear materials, equipment, technology and facilities do not contribute to nuclear proliferation, the Treaty creates the necessary basis for peaceful nuclear cooperation and transfer.

3. Full and universal implementation of the Non-Proliferation Treaty remains essential to facilitating the peaceful use of nuclear applications in a growing range of areas. To this end, and highlighting the ongoing relevance and importance of the Treaty, over 140 International Atomic Energy Agency (IAEA) member States, including 35 least developed countries, have engaged in technical cooperation with IAEA. In addition, important efforts have been undertaken in the lead-up to, during and following the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, including the advancement of the 64-point action plan on nuclear disarmament from the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, and continued high-level

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focus on nuclear testing, the peaceful uses of nuclear energy and nuclear safety and security.

4. The lack of a consensus outcome at the 2015 Review Conference, together with limited progress on the implementation of nuclear disarmament commitments, the lack of universality and non-compliance challenges, however, test confidence in the Non-Proliferation Treaty. Given these challenges, it is imperative that discussions at the Preparatory Committee are conducted in a spirit of cooperation and help support the continued strengthening of the Treaty. The eight reflections of the Chair of the 2017 session of the Preparatory Committee can serve as a reference point in that regard.

5. The three pillars of the Non-Proliferation Treaty remain equally important and mutually reinforcing. The Vienna Group of Ten calls on all States, including those outside of the Treaty, to redouble their efforts to realize the fundamental goals of the Treaty, including full and irreversible disarmament.

6. The Vienna Group of Ten emphasizes the importance of promoting the equal, full and effective participation of both women and men in nuclear non-proliferation, nuclear disarmament and the peaceful use of nuclear energy.

7. We welcome the ongoing multilateral work of the International Partnership for Nuclear Disarmament Verification to develop credible measures and build global capacity for verifying nuclear disarmament. We also welcome the establishment by the United Nations of the Group of Governmental Experts on Nuclear Disarmament Verification and look forward to considering its recommendations.

8. We further highlight the important complementary roles of a fissile material cut-off treaty, inter alia, as a quantitative control on nuclear weapons proliferation, and the Comprehensive Nuclear-Test-Ban Treaty. The Vienna Group of Ten therefore strongly supports the work of the high-level fissile material cut-off treaty expert preparatory group and looks forward to its conclusions in the coming months. As one of the 13 practical steps agreed in 2000 and reaffirmed in action 15 of the 2010 action plan, the conclusion of a fissile material cut-off treaty is vital to the Non-Proliferation Treaty and would constitute a core element of the nuclear disarmament and non-proliferation regime. We urge all States that have not yet done so to implement a moratorium on fissile material production for nuclear weapons or other nuclear explosive purposes.

9. The present working paper aims to ensure that the so-called "Vienna issues" listed in the title of the paper are given appropriate weight during the work of the Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons in 2018. In this regard, we would welcome the opportunity offered by the 2018 meetings of the Preparatory Committee to States parties in developing an outcomes document that can further be built upon with the goal of contributing to the 2020 Review Conference.

10. **The Vienna Group of Ten proposes that the Preparatory Committee submit the following draft recommendations to the 2020 Review Conference:**

On the Comprehensive Nuclear-Test-Ban Treaty, that the Review Conference:

(1) *Affirm* that the Comprehensive Nuclear-Test-Ban Treaty is vital to the Non-Proliferation Treaty and constitutes a core element of the nuclear disarmament and nuclear non-proliferation regime;

(2) *Underline* that the entry into force of the Comprehensive Nuclear-Test-Ban Treaty is of the utmost urgency as it will provide the global community with a permanent, non-discriminatory, verifiable and legally binding commitment to

end any nuclear weapon test explosion or any other nuclear explosion, as a means to constrain the development and qualitative improvement of nuclear weapons, which combats both horizontal and vertical nuclear proliferation;

(3) *Urge* all States that have not yet done so to sign and/or ratify the Comprehensive Nuclear-Test-Ban Treaty without delay, in particular those remaining eight Annex 2 States necessary for the Comprehensive Nuclear-Test-Ban Treaty's entry into force;

(4) *Urge* States signatories to promote adherence to the Treaty through bilateral and joint outreach, seminars and other means;

(5) *Urge* all States to acknowledge the global de facto norm against nuclear testing and to maintain the moratorium on explosive nuclear tests, and refrain from any action that would defeat the object and purpose of the Comprehensive Nuclear-Test-Ban Treaty, pending its entry into force;

(6) *Urge* all States to support the development of the Comprehensive Nuclear-Test-Ban Treaty's verification regime, which is vital to the effectiveness of the Treaty and to maintaining the norm that existing signatures and ratifications establish against nuclear testing;

(7) *Urge* States signatories to support the work of the Provisional Technical Secretariat to ensure that the technical aspects of the Comprehensive Nuclear-Test-Ban Treaty Organization's work continue to move ahead so that the verification regime shall be capable of monitoring compliance with the Treaty at its entry into force and to sustain political progress towards entry into force;

(8) *Urge* States signatories to support the work of the Provisional Technical Secretariat to accelerate the completion of the International Monitoring System.

On compliance and verification, that the Review Conference:

(9) *Underline* the importance of building and maintaining confidence in the peaceful nature of nuclear activities in non-nuclear-weapon States;

(10) *Call for* the universal application of IAEA safeguards, and call on all States to submit all relevant materials and activities, both current and future, to IAEA safeguards;

(11) *Urge* all States parties to the Non-Proliferation Treaty that have yet to bring into force comprehensive safeguards agreements to do so as soon as possible;

(12) *Recognize* the Additional Protocol as a long-standing and integral part of the IAEA safeguards system, affirm that a comprehensive safeguards agreement, together with an additional protocol, represents the current verification standard pursuant to article III (1) of the Treaty, and urge all States parties that have not yet done so to conclude and bring into force an additional protocol as soon as possible;

(13) *Urge* all States to cooperate fully with IAEA in implementing safeguards agreements and in expeditiously addressing anomalies, inconsistencies and questions identified by IAEA in order to assist IAEA in drawing its annual safeguards conclusions with respect to the correctness and completeness of States' declarations;

(14) *Call on* all States currently in non-compliance with their Non-Proliferation Treaty safeguards obligations to remedy such non-compliance forthwith and move promptly to return to compliance with all of their Treaty safeguards obligations;

(15) *Note* that, in order to draw credible safeguards conclusions, IAEA needs the full cooperation of States in the implementation of their safeguards agreements, including through the provision by States of early design information;

(16) *Welcome* the efforts of IAEA to apply the State-level concept to all States with a safeguards agreement in force, as part of the continuing evolution of the safeguards system necessary to increasing its effectiveness and efficiency.

On export controls, that the Review Conference:

(17) *Reaffirm* that all States parties to the Non-Proliferation Treaty are responsible for ensuring that their nuclear-related exports do not directly or indirectly assist in the development of nuclear weapons or other nuclear explosive devices and that such exports are conducted in full conformity with the objectives and undertakings of the Treaty;

(18) *Urge* all States to apply in their export controls the Understandings of the Zangger Committee, which are designed to implement the obligations under article III of the Treaty, and to further make use of relevant multilaterally agreed upon export control Guidelines and Understandings;

(19) *Stress* that effective export controls are central to enabling cooperation in the peaceful uses of nuclear energy;

(20) *Recognize* that sound domestic laws and regulations are a prerequisite to effective implementation of export controls;

(21) *Reaffirm* that the list of items triggering IAEA safeguards and the procedures for implementing control of these items, in accordance with article III (2) of the Treaty, should be reviewed regularly to take into account advances in technology, their proliferation sensitivity and changes in procurement practices;

(22) *Welcome* States parties' increasing adherence to the Understandings of the Zangger Committee and Guidelines of the Nuclear Suppliers Group relating to export control, encourage further progress in this regard, and call on all States parties to examine opportunities offered by the increasing adherence to export control regimes with a view to strengthening the global nuclear disarmament and non-proliferation regime;

(23) *Reaffirm* that new supply arrangements for the transfer of source or special fissionable material or equipment or material especially designed or prepared for the processing, use or production of special fissionable material to non-nuclear-weapon States should require, as a necessary precondition, acceptance of full-scope IAEA safeguards, and urge all States to require an additional protocol based on the model INFCIRC/540 (Corrected) as a condition for new supply arrangements.

On cooperation in the peaceful uses of nuclear energy, that the Review Conference:

(24) *Acknowledge* the inalienable right, under article IV of the Non-Proliferation Treaty, of all States parties to undertake the research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with articles I, II and III, recognizing the benefits that can be obtained from the peaceful applications of nuclear energy and nuclear techniques;

(25) *Stress* that adherence to, and compliance with, the non-proliferation and verification requirements of the Treaty are preconditions for cooperation in this field;

(26) *Stress* the importance of implementing the highest levels of safety and security at all stages of the nuclear fuel cycle and in the peaceful use of nuclear energy;

(27) *Underline* the essential role of IAEA in assisting developing States parties in engaging in the peaceful applications of nuclear energy and nuclear techniques, including through its Technical Cooperation Programme, as well as the further development of instruments, standards and codes of conduct to ensure human safety and security and environmental protection;

(28) *Emphasize* the important role that nuclear applications can play in realizing the goals of the 2030 Agenda for Sustainable Development, and note that the Sustainable Development Goals of States parties can provide a framework for tangible results to which the IAEA Technical Cooperation Programme, as a useful vehicle for technology transfer, can make an important contribution.

On nuclear safety, that the Review Conference:

(29) *Emphasize* the importance for States and international organizations to continue to take active steps to enhance safety measures for all fuel cycle activities;

(30) *Underline* that measures to strengthen nuclear safety facilitate international cooperation in the field of peaceful nuclear activities and the production, transfer and use of nuclear and other radioactive material;

(31) *Encourage* all States to become party to the Convention on Nuclear Safety, and encourage contracting parties to fulfil their obligations under the Convention;

(32) *Encourage* all States to become party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, and encourage contracting parties to fulfil their obligations under the Joint Convention;

(33) *Encourage* all States to implement the principles of the Vienna Declaration on Nuclear Safety to prevent accidents with radiological consequences and mitigate such consequences should they occur;

(34) *Underline* the central role of IAEA in enhancing the global nuclear safety regime, and in sharing and encouraging the application of lessons learned from the accident at the Fukushima Daiichi nuclear power plant;

(35) *Emphasize* the importance of States continuing to take active steps to respond to the observations and lessons contained in the report by the IAEA Director General on the Fukushima Daiichi accident to identify further scope for enhancing nuclear safety;

(36) *Encourage* all States to address regulatory effectiveness and transparency, operational safety, design safety and emergency preparedness and response by hosting IAEA review missions on a regular basis, and to share publicly the outcomes in order to further strengthen the safety of nuclear and radioactive material worldwide;

(37) *Emphasize* the need for States embarking on nuclear energy programmes to develop adequate national technical, human and regulatory infrastructure to

ensure safety, security and safeguards for all fuel cycle activities in line with international conventions, standards, guidelines and recommendations, as appropriate, at a very early stage of the process;

(38) *Emphasize* also the importance for all States embarking on nuclear power programmes to plan in early stages for the secure, safe and safeguarded management of spent fuel and radioactive waste;

(39) *Highlight* the importance of environmental safety considerations in nuclear power programme design, construction, operation, decommissioning and disposal activities;

(40) *Emphasize* the importance for all States, in particular those with nuclear fuel cycle activities, to become party to all conventions and agreements relevant to safety and security and support the further development, as necessary, of legally binding instruments to ensure a better global safety and security framework;

(41) *Underline* the importance of international cooperation to enhance the safety of the transportation of nuclear and radioactive material, including through the use of best practice guidelines for systematic communications in relation to the safe maritime and other transport of radioactive material;

(42) *Welcome* the IAEA guidance on the management of radioactive sources throughout their life cycle, including for disused sources.

On nuclear security, that the Review Conference:

(43) *Underline* the importance of effective nuclear security, including both physical protection and cybersecurity of all nuclear and other radioactive materials, including those materials used for military purposes and related facilities, and emphasize the need for all States to achieve and maintain the highest standards of such nuclear security;

(44) *Recognize* the constantly evolving threat of nuclear and radiological terrorism and the risk of acquisition of materials by non-State actors, and highlight the need to take measures to identify and address new and evolving challenges and threats to the security of nuclear and radioactive material and related facilities;

(45) *Call on* States that possess nuclear weapons to undertake voluntary measures to increase transparency and confidence in the effectiveness of security for military nuclear materials;

(46) *Affirm* the central role of IAEA in strengthening the nuclear security framework globally and in coordinating international nuclear security activities;

(47) *Underline* that measures to strengthen nuclear security facilitate international cooperation in the field of peaceful nuclear activities and the promotion of peaceful uses of nuclear energy, as nuclear security is essential to the responsible production, storage, transfer and use of nuclear and other radioactive material and the exchange of nuclear material for peaceful purposes;

(48) *Call on* States to ensure that IAEA has reliable and sufficient technical, financial and human resources to sustainably and predictably undertake its nuclear security-related activities;

(49) *Call for* the acceleration of efforts to develop and implement an effective and comprehensive global nuclear security framework based on prevention, detection and response;

(50) *Encourage* States that have not yet done so to become party to the Convention on the Physical Protection of Nuclear Material and the 2005 Amendment thereto as soon as possible, and encourage all States parties to the Convention and the 2005 Amendment thereto to fully implement their obligations thereunder;

(51) *Urge* all States that have not yet done so to sign and ratify the International Convention for the Suppression of Acts of Nuclear Terrorism as soon as possible, and encourage all States parties to the Convention to fully implement their obligations thereunder;

(52) *Encourage* States to subscribe to the Joint Statement on Strengthening Nuclear Security Implementation (INFCIRC/869), and to meet the essential elements of a nuclear security regime and to commit to the effective and sustainable implementation of the principles therein;

(53) *Call on* States to subscribe, where relevant, to joint commitments aimed at further strengthening aspects of nuclear security;

(54) *Highlight* the importance of maintaining effective transport security;

(55) *Encourage* States to use IAEA guidance to expand efforts to strengthen preventive and protective measures against insider threats at nuclear facilities, including through the development and use of effective nuclear material accountancy and control systems;

(56) *Encourage* States to host IAEA advisory services relevant to nuclear security on a recurrent basis, and establish and implement, with IAEA, as appropriate, Integrated Nuclear Security Support Plans in order to improve nuclear security at the national level and as a contribution to strengthening the global nuclear security framework. States are also encouraged to share experience gained in improving their nuclear security and to support International Physical Protection Advisory Service missions by providing experts and/or financial support, where feasible;

(57) *Note* with serious concern the threat posed by the illicit trafficking in nuclear and other radioactive material, equipment and technology;

(58) *Recognize* the increased need for all States parties to reinforce their efforts on improving existing cooperation mechanisms, including through membership in and information-sharing through the IAEA Incident and Trafficking Database;

(59) *Encourage* States to further minimize highly enriched uranium stocks and to further minimize their use, including by converting radioisotope production to low-enriched uranium fuel and targets or by using other non-highly enriched uranium technologies, taking into account the need for an assured and reliable supply of medical isotopes;

(60) *Encourage* States to keep their stockpiles of separated plutonium to the minimum amount possible consistent with their national requirements;

(61) *Highlight* the importance of nuclear forensics as an essential component of an effective nuclear security architecture, and encourage States to develop and enhance nuclear forensics capabilities;

(62) *Welcome* the work of IAEA in raising awareness of the potential impact on nuclear security of cyberattacks, and the provision of guidance and assistance to IAEA member States in enhancing computer security and information security;

(63) *Welcome* contributions by the United Nations and the International Criminal Police Organization (INTERPOL) to strengthening global nuclear security;

(64) *Welcome* nuclear security-related initiatives, such as the Global Initiative to Combat Nuclear Terrorism, the Proliferation Security Initiative, the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, the Nuclear Security Contact Group and the Nuclear Industry Steering Group for Security, and encourage active participation in these initiatives;

(65) *Welcome* the outcomes of the 2016 comprehensive review conducted by the Security Council Committee established pursuant to resolution 1540 (2004) (S/2016/1038), and further welcome efforts to universalize the implementation of Security Council resolution 1540 (2004);

(66) *Call on* States to establish competent and well-coordinated independent authorities to detect and respond to criminal or unauthorized acts involving any nuclear or other radioactive material that is out of regulatory control.

On discouraging withdrawal from the Non-Proliferation Treaty, that the Review Conference:

(67) *Affirm* the unique role the Non-Proliferation Treaty plays in providing a framework that fosters international confidence and cooperation in the peaceful uses of nuclear energy;

(68) *Note* that withdrawal from the Treaty carries inherent risks to non-proliferation efforts and could constitute a threat to international peace and security;

(69) *Agree* that exercise of the right of withdrawal under article X of the Treaty be governed by the following principles:

(a) Withdrawal is a right for States parties governed by article X of the Treaty, which sets out that the right can only be exercised in the face of extraordinary events related to the subject matter of the Treaty, can only be exercised following notice to all other States parties and the Security Council three months in advance, and that such notice must include a statement of the extraordinary events the withdrawing State regards as having jeopardized its supreme interest;

(b) This right is governed by international law; the withdrawing State is still liable for violations of the Treaty perpetrated prior to withdrawal;

(c) Withdrawal should not affect any right, obligation or legal situation between the withdrawing State and each of the other States parties created through implementation of the Treaty prior to withdrawal, including those related to IAEA safeguards;

(d) Every diplomatic effort should be made to persuade the withdrawing State to reconsider its decision, including by addressing its legitimate security needs and encouraging regional diplomatic initiatives;

(e) All nuclear materials, equipment and technology acquired by a State party under article IV prior to withdrawal must remain under IAEA safeguards or fallback safeguards even after withdrawal;

(f) Nuclear-supplying States should be encouraged to exercise their right — in accordance with international law and their national legislation — to incorporate dismantling and/or return clauses or fallback safeguards in the event of withdrawal into contracts or other arrangements concluded with the withdrawing State, and to adopt standard clauses for this purpose.

Background note 1: the Comprehensive Nuclear-Test-Ban Treaty

1. The Comprehensive Nuclear-Test-Ban Treaty was an integral part of the 1995 decision to indefinitely extend the Non-Proliferation Treaty and constitutes a core element of the nuclear disarmament and nuclear non-proliferation regime. Once in effect, it will provide the global community with a permanent, non-discriminatory, verifiable and legally binding commitment to end any nuclear weapon test explosion or any other nuclear explosions. It constrains the development of nuclear weapons and their qualitative improvement, which combats both horizontal and vertical nuclear proliferation. The provisions of article V of the Non-Proliferation Treaty should be interpreted in this light.

2. More than two decades have passed since the Comprehensive Nuclear-Test-Ban Treaty was opened for signature. Although the Treaty has yet to come into force, the nuclear test moratorium has become a de facto international norm. However, as was recognized in the eighth Joint Ministerial Statement on the Comprehensive Nuclear-Test-Ban Treaty, entry into force of the Treaty remains our urgent goal due to its permanent and legally binding effect. Progress has been made towards ratification, and continued efforts are under way to that end: the Treaty has now been signed by 183 States, and of those 166 have ratified it, including 36 whose ratification is necessary for entry into force. Recalling the 2000 and 2010 Review Conferences, including the 2010 action plan on nuclear disarmament, the entry into force of the Comprehensive Nuclear-Test-Ban Treaty remains of the utmost urgency.

3. The international community has repeatedly reaffirmed its commitment to the Comprehensive Nuclear-Test-Ban Treaty and highlighted the importance of its earliest possible entry into force, most recently in the final declaration adopted at the tenth Article XIV Conference, held in New York in September 2017. This Conference, which discussed concrete measures to facilitate the urgent entry into force of the Treaty, set out the commitment of States signatories to take concrete and actionable steps towards early entry into force and universalization of the Treaty. The Security Council, in its resolution 2310 (2016), also recognized that early entry into force of the Treaty would constitute an effective nuclear disarmament and non-proliferation measure that would contribute to the achievement of a world without nuclear weapons. In its resolution, the Council urged all States that had either not signed or not ratified the Treaty, particularly the eight remaining Annex 2 States, to do so without further delay.

4. Pending the Comprehensive Nuclear-Test-Ban Treaty's entry into force, States should refrain from any action that would defeat its object and purpose. Development of new types of nuclear weapons, for example, may result in the resumption of tests and a lowering of the nuclear threshold. The existing moratorium on nuclear weapon test explosions and any other nuclear explosions must be maintained, but cannot serve as a substitute for ratifying the Treaty.

5. Only the Democratic People's Republic of Korea has acted contrary to the moratorium in the twenty-first century, by conducting nuclear tests in 2006, 2009, 2013, twice in 2016 and most recently on 3 September 2017. We joined the international community in strongly condemning these tests, which undermine the international non-proliferation regime and the object and purpose of the Comprehensive Nuclear-Test-Ban Treaty. The events further underlined the urgent need for entry into force of the Treaty and the relevance and effectiveness of a universal and effective international monitoring and verification system for detecting nuclear explosions.

6. The Comprehensive Nuclear-Test-Ban Treaty Organization Preparatory Commission is making good progress in building the system to verify compliance

with the Treaty at its entry into force. The goal of this work should be an effective, reliable, participatory and non-discriminatory verification system with global reach. All major components of the verification system, including the capability to conduct an on-site inspection, should be ready to meet the verification requirements of the Treaty by the time of its entry into force. Data from the international monitoring and verification system should also continue to be used for civil and scientific purposes, especially in the context of natural disasters and other emergency situations, as well as climate change, including further cooperation with other international organizations in this regard.

7. There are a number of outreach activities that promote the signature and ratification of the Treaty, including the Group of Eminent Persons and the Comprehensive Nuclear-Test-Ban Treaty Organization Youth Group, as well as bilateral and regional outreach activities undertaken by States signatories. Extensive training courses and conferences also contribute to enhanced awareness of the Treaty, help enable States signatories to fulfil their verification responsibilities and address possible technical, scientific and legal challenges. Since 2010, focused activities have been undertaken to build the capacity of experts from developing countries and to expand the roster of qualified inspectors and surrogate inspectors.

Background note 2: compliance and verification

1. Full compliance with all the provisions of the Non-Proliferation Treaty, including with relevant safeguards agreements, underpins the integrity of the Treaty. IAEA safeguards are fundamental to the nuclear non-proliferation regime and help create an environment conducive to nuclear cooperation.

2. Article III (1) of the Treaty requires non-nuclear-weapon States parties to accept safeguards on all source and special fissionable material in all peaceful nuclear activities. A State's comprehensive safeguards agreement, based on IAEA document INFCIRC/153 (Corrected), requires the State to account for and control all nuclear material subject to safeguards and to provide the required design information and reports to IAEA. IAEA, as the competent authority designated under article III, verifies the correctness and completeness of a State's declarations in order to provide assurances of the non-diversion of nuclear material from declared activities and of the absence of undeclared nuclear material and activities.

3. Credible assurances regarding the absence of undeclared nuclear material and activities require that a comprehensive safeguards agreement be complemented by an additional protocol based on IAEA document INFCIRC/540 (Corrected). Implementation of an additional protocol provides increased confidence about a State's compliance with its Treaty obligations and is an integral part of the IAEA safeguards system, as it grants IAEA the tools needed to draw credible conclusions on the absence of undeclared nuclear materials and activities. The combination of a comprehensive safeguards agreement and an additional protocol represents the current verification standard pursuant to article III (1) of the Treaty. The comprehensive safeguards agreement and additional protocol together allow for the application of integrated safeguards, that is, the implementation of efficiency measures without compromising safeguards effectiveness in States where IAEA is confident there is an absence of undeclared nuclear materials and activities.

4. All States parties that have not yet done so should conclude and implement comprehensive safeguards agreements. A total of 148 States have signed an additional protocol, and such protocols are in force for 132 States. Those States that have not yet done so should bring into force additional protocols without further delay, and all States should submit all nuclear material and activities, both current and future, to IAEA safeguards.

5. The 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons and the follow-up Review Conference in 2010 confirmed that IAEA safeguards should be assessed and evaluated regularly. Decisions adopted by IAEA policymaking organs aimed at further strengthening the effectiveness and improving the efficiency of IAEA safeguards should be supported and implemented.

6. The IAEA State-level concept represents progress towards a more effective and efficient safeguards system that adheres fully to the principles of non-discriminatory, technical, objectives-based safeguards implementation.

7. All States should cooperate fully with IAEA in implementing safeguards agreements and in expeditiously addressing anomalies, inconsistencies and questions identified by the Agency in order to assist it in reaching its annual safeguards conclusions, which are of critical importance in assessing States' compliance with their Non-Proliferation Treaty obligations. IAEA should continue to make full use of all tools at its disposal to draw conclusions and resolve safeguards issues.

8. In order to draw well-founded safeguards conclusions, IAEA needs to receive early design information, in accordance with the 1992 decision of the IAEA Board of

Governors (IAEA document GOV/2554/Attachment 2/Rev.2), which outlines the need for all non-nuclear-weapon States parties to provide this information to the Agency on a timely basis.

9. States should undertake consultations with IAEA early in the design process for new nuclear facilities to ensure that aspects relevant to safeguards are taken into consideration in order to facilitate future safeguards implementation, from their initial planning stage through design, construction, operation and decommissioning.

10. Any State party that does not comply with its safeguards obligations under the Non-Proliferation Treaty isolates itself from the benefits of constructive international relationships and from the benefits that accrue from adherence to the Treaty, including from cooperation in the peaceful uses of nuclear energy, until it enters into full compliance. The Group of Ten calls on those States that are currently non-compliant to move promptly to full compliance with their obligations, in particular:

- The Democratic People's Republic of Korea. The nuclear weapons programme of the Democratic People's Republic of Korea, including nuclear tests in 2006, 2009, 2013, 2016 and 2017, remains a serious challenge to the international nuclear non-proliferation regime. The Democratic People's Republic of Korea must comply with its Non-Proliferation Treaty obligations and allow for the return of IAEA inspectors and the reintroduction of IAEA safeguards.
- The Syrian Arab Republic. The finding by the IAEA Board of Governors in 2011, that the country's undeclared construction of a nuclear reactor at Dair Alzour and its failure to provide design information for this facility constitutes non-compliance with obligations under its safeguards agreement, remains a concern. The Syrian Arab Republic must remedy its non-compliance by cooperating fully with IAEA, including by providing full access to all sites and locations the Agency has requested.

11. In July 2015, the E3/EU+3 reached agreement with the Islamic Republic of Iran on the Joint Comprehensive Plan of Action. The full and ongoing implementation of the Plan, in which the Islamic Republic of Iran reaffirmed that it will under no circumstances ever seek, develop or acquire any nuclear weapons, contributes to building confidence in the exclusively peaceful nature of that country's nuclear programme, as would the early ratification of an additional protocol to its safeguards agreement with IAEA. Verification is fundamental to the Plan, and IAEA is responsible for monitoring and verifying Iranian implementation of its nuclear commitments. IAEA will continue to need significant extrabudgetary contributions over the lifetime of the Plan in order to fulfil this role, and member States should consider making voluntary contributions to support the IAEA efforts in this area.

Background note 3: export controls

1. Export controls aim to ensure that nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or other nuclear explosive devices, an unsafeguarded nuclear fuel cycle activity or acts of nuclear terrorism, and that international trade and cooperation in the nuclear field, under article IV of the Non-Proliferation Treaty, is not hindered unduly in the process. Nuclear export controls are a legitimate, necessary and desirable means of implementing the obligations of States parties under article III of the Treaty.

2. The existence of extensive covert networks for the procurement and the supply of sensitive nuclear equipment and technology underlines the need for all States to exercise vigilance in countering nuclear proliferation, including through the strict implementation of national nuclear export control policies. States should have in place adequate laws and regulations so that they can effectively implement export controls.

3. There is a clear relationship between the non-proliferation obligations as set out in articles I, II and III of the Non-Proliferation Treaty and the objectives for peaceful uses set out in article IV of the Treaty. Nothing in the Treaty should be interpreted as affecting the inalienable right of all States parties to the Treaty to undertake research, production and use of nuclear energy for peaceful purposes, without discrimination and in conformity with articles I, II and III of the Treaty. Recipient States have an obligation to exercise appropriately stringent controls to prevent nuclear proliferation.

4. The Understandings of the Zangger Committee (INFCIRC/209, as amended) provide important guidance to States parties in meeting their obligation under article III (2) of the Non-Proliferation Treaty. They include a list of items triggering IAEA safeguards for exports to States not party to the Treaty.

5. The Nuclear Suppliers Group Guidelines (INFCIRC/254, as amended) play an important and useful role in the development of national export control policies and contribute to the international non-proliferation regime.

6. The list of items triggering IAEA safeguards and the procedures for implementing control of these items, in accordance with article III (2) of the Non-Proliferation Treaty, should be reviewed regularly so as to take into account advances in technology, proliferation sensitivity and changes in procurement practices.

7. Guidelines from export control regimes are finding increasing acceptance and application by national authorities and the number of States participating in these regimes continues to grow. All States parties should consider the opportunities offered by the increasing adherence to export control guidelines with a view to strengthening the global nuclear disarmament and non-proliferation regime.

8. In September 2008, a number of States parties participating in the Nuclear Suppliers Group granted an exception specific to India to the full-scope safeguards requirement in the Nuclear Suppliers Group's export control guidelines. This exemption was based on certain non-proliferation commitments and actions by India (INFCIRC/734 (Corrected)). Notwithstanding this decision, continuing importance is attached to the principle that new supply arrangements for the transfer of source or special fissionable material, or equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to non-nuclear-weapon States should require, as a necessary precondition, the acceptance of full-scope IAEA safeguards and internationally legally binding commitments not to acquire nuclear weapons or other nuclear explosive devices.

9. All non-nuclear-weapon States parties to the Non-Proliferation Treaty have a legal obligation under article III of the Treaty to accept IAEA safeguards. As a comprehensive safeguards agreement, together with an additional protocol, represents the verification standard for the fulfilment of this obligation, this verification standard should be acknowledged and applied as a condition for all new supply arrangements to non-nuclear-weapon States. The additional protocol further contains important provisions related to reporting to IAEA on the export and import of nuclear-related equipment.

10. Before supplying nuclear material, sensitive equipment or technology, States parties have the responsibility to seek assurance that the recipient State has in place an effective and adequate national nuclear security regime. This regime comprises Non-Proliferation Treaty-related IAEA safeguards, an adequate system of physical protection, a minimum set of measures to combat illicit trafficking and rules and regulations for appropriate export controls in cases of retransfer.

Background note 4: cooperation in the peaceful uses of nuclear energy

1. For the purposes of article IV of the Non-Proliferation Treaty, "nuclear energy" embraces both power and non-power applications. All States parties to the Treaty have an inalienable right to undertake research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with articles I, II and III of the Treaty. States parties may choose individually not to exercise all their rights, or to exercise those rights collectively.

2. All States parties to the Non-Proliferation Treaty have undertaken to facilitate, and have the right to participate in, the fullest possible exchange of equipment, material, services and scientific and technological information for the peaceful uses of nuclear energy in a safe and secure environment.

3. Nuclear applications play an essential role in areas such as human health, water management, agriculture, food safety and nutrition, energy and environmental protection. Nuclear applications can contribute to realizing the Sustainable Development Goals for all States parties.

4. IAEA plays an essential role, including through its Technical Cooperation Programme, in assisting States to build human and institutional capacities, including regulatory capabilities, for the safe, secure and peaceful application of nuclear science and technology. The upcoming international conference on nuclear science and technology to be held at ministerial level in 2018 will be an additional occasion for Member States to coordinate and cooperate with IAEA in promoting and furthering the peaceful uses of nuclear energy. The Agency's motto, "Atoms for Peace and Development", reflects its broad contribution in this regard. Over 140 countries take part in the Agency's Technical Cooperation Programme in pursuit of socioeconomic development. The Agency's Peaceful Uses Initiative is a flexible and efficient instrument which provides additional, extrabudgetary contributions to the Technical Cooperation Programme. We welcome the Agency's efforts to enhance the effectiveness and efficiency of these activities. Close cooperation among States parties, IAEA and international organizations, in particular those of the United Nations family, facilitates synergies and minimizes overlap. The Technical Cooperation Programme can help realize the goals of the 2030 Agenda for Sustainable Development.

5. The IAEA medium-term strategy provides important strategic guidance for the Technical Cooperation Programme. Based on the strategy, IAEA should identify priorities for each programme cycle. Continuing adherence to model project standards, expanded use of Country Programme Frameworks and full and timely payment of assessed voluntary contributions should be prerequisites for full receipt of technical cooperation. IAEA should assign greater priority to the needs of developing countries, and in particular those of the least developed countries, when planning its future activities. The implementation of the 2030 Agenda for Sustainable Development should serve as a guide for defining priority activities in support of the 17 Sustainable Development Goals.

6. Nuclear safety and nuclear security aim at preventing or mitigating accidental or deliberate harmful effects of radiation on people and the environment. They enable access to the peaceful uses of nuclear energy and are essential for maintaining public support for peaceful uses. When developing nuclear energy, including nuclear power, it remains important to ensure that the use of nuclear energy is accompanied by commitments to and ongoing implementation of safeguards as well as the highest levels of safety and security, including at all stages of the nuclear fuel cycle. We support implementation of standards, guidance and codes of conduct developed within the framework of IAEA, as well as relevant international legal instruments. The technical and appropriate regulatory infrastructure and a skilled workforce, as well as legislative frameworks and independent regulatory bodies, have to be in place when developing nuclear energy.

Background note 5: nuclear safety

1. Safety in all activities throughout the nuclear fuel cycle is a prerequisite for the peaceful uses of nuclear energy. Protection of the people and the environment can be achieved by ensuring the highest levels of nuclear and radiation safety, security and safeguards, including management of their interfaces. This requires continuous efforts to prevent complacency and ensure all elements of safety culture are maintained at the optimal level. Primary responsibility for the safety of nuclear installations rests with the operators. Individual States are responsible for establishing frameworks for safety, including ensuring that necessary national technical, human and regulatory infrastructure are in place. This may require States to invest in education and training programmes and seek technical cooperation and assistance.

2. Although responsibility for the nuclear safety framework rests with individual States, international cooperation, especially that led by IAEA, is vital for the exchange of knowledge and learning from best practices and experience. The international community has strengthened its focus on nuclear safety since the Fukushima Daiichi nuclear accident in 2011, including through: the adoption of the Declaration of the IAEA Ministerial Conference on Nuclear Safety; the High-level Meeting on Nuclear Safety and Security (hosted by the Secretary-General); the Action Plan on Nuclear Safety endorsed by the General Conference of IAEA in 2011; the Vienna Declaration on Nuclear Safety adopted by consensus in February 2015; and, published in August 2015, the report of the IAEA Director General on the Fukushima Daiichi accident. The report by the Director General on the Fukushima Daiichi accident highlighted 45 observations and lessons aimed at strengthening nuclear safety worldwide. All States with nuclear facilities are encouraged to host IAEA peer review missions on a regular basis and publicly share the outcomes in order to further strengthen nuclear safety worldwide.

3. It is also important for States that have nuclear fuel cycle activities and radioactive material to become party to all relevant conventions and to make the political commitments necessary to ensure a better global safety framework, including:

- The Convention on Nuclear Safety, which is of central importance for States operating, constructing or planning nuclear power reactors.
- The Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management, which allows for the coordination of efforts to develop and implement disposal and long-term storage solutions for spent fuel and waste.
- The Convention on Early Notification of a Nuclear Accident, and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, which sets out a framework for international cooperation and response, involving IAEA, should such an event occur.
- The various Conventions on civil liability for nuclear damage, which are important to ensure prompt compensation for damage.
- The Code of Conduct on the Safety of Research Reactors, which establishes best practice guidelines for the licensing, construction and operation of research reactors.
- The Code of Conduct on the Safety and Security of Radioactive Sources and its associated Guidance, which provide international requirements for the regulatory control of radioactive sources.

- The Regulations for the Safe Transport of Radioactive Material, which establish transport standards relating to the safety of persons, property and the environment.
- The observations and lessons of the report of the IAEA Director General on the Fukushima Daiichi accident, which should form the basis for continued efforts by the IAEA secretariat and member States. The Agency's Incident and Emergency Centre serves as its focal point for responding to nuclear or radiological incidents and emergencies and for promoting improvement in emergency response and preparedness.
- By taking full advantage of IAEA advisory services, including the IAEA Integrated Regulatory Review Service, to implement global best practice in nuclear safety regulation.

4. International cooperation is important in order to enhance the safety of international transportation of radioactive materials while respecting maritime and air navigation rights and freedoms under international law. It is in the interests of all States that maritime and other transportation of nuclear and radioactive materials continue to be conducted in compliance with international standards of safety, security and environmental protection. For this purpose, States, in coordination with IAEA and other international organizations, must assess and address any regulatory challenges arising from the deployment of new technologies in a timely manner, including, but not limited to, transportable nuclear power plants and small, medium and modular reactors.

5. A positive example of international cooperation in action is the practice of some shipping States and operators by which timely information and responses are provided to relevant coastal States to address safety and security concerns, including in the event of an accident, through the use of agreed best practice guidelines for systematic communications.

6. The IAEA secretariat's implementation of the Plan of Activities on the Radiation Protection of the Environment remains important. There should be further cooperation between IAEA and relevant international organizations and stakeholders in promoting a coherent international policy regarding the radiological protection of the environment. The United Nations Scientific Committee on the Effects of Atomic Radiation continues to provide a valuable contribution by assessing and reporting levels and effects of exposure to ionizing radiation. Many States rely on the Committee's estimates as the scientific basis for evaluating radiation risk and for establishing protective measures.

7. The IAEA International Expert Group on Nuclear Liability continues to undertake valuable work in examining the application and scope of the international nuclear liability regime and considering further specific actions to address any gaps in scope and coverage of the regime. The International Expert Group should continue to address outstanding issues as provided for in the Action Plan on Nuclear Safety and in the recommendations of the 2011 IAEA International Conference on the Safe and Secure Transport of Radioactive Material.

Background note 6: nuclear security

1. Since the last Non-Proliferation Treaty Review Conference, States have continued to stress the vital importance of nuclear security and the responsibility of States to maintain, at all times, effective security of all nuclear and other radioactive materials, including nuclear materials used in nuclear weapons, and nuclear facilities under their control.

2. The strong international commitment to strengthening nuclear security worldwide has been demonstrated by a number of important events and initiatives, such as:

- The broad consensus behind the Ministerial Declarations at the International Conferences on Nuclear Security convened by IAEA in 2013 and 2016.
- The implementation of the workplan adopted by the 2010 Nuclear Security Summit, and communiqués, gift baskets and action plans agreed upon at subsequent Summits in 2012, 2014 and 2016.
- A number of initiatives aimed at supporting nuclear security, including the Global Partnership against the Spread of Weapons and Materials of Mass Destruction, the Global Initiative to Combat Nuclear Terrorism, the Proliferation Security Initiative, and the Nuclear Security Contact Group and the Nuclear Industry Steering Group for Security.

3. The central and essential role of IAEA in efforts to strengthen the global nuclear security framework, and in promoting and supporting its implementation and facilitating effective cooperation and coordination at the international and regional levels, is generally recognized and widely supported by a growing number of States. In implementing its Nuclear Security Plan for 2018–2021, IAEA can rely on their strong commitment to further improving nuclear security and strengthening the Agency's central role. There has also been a growing international recognition of the important role of nuclear industry in implementing and enhancing nuclear security.

4. In order to further strengthen nuclear security worldwide, the following concrete measures are of vital importance:

- In line with the *Nuclear Security Fundamentals* adopted by the IAEA Board of Governors, IAEA should continue to develop guidance through its Nuclear Security Series publications.
- Without altering the non-binding status of the IAEA Nuclear Security Series documents, States may commit themselves voluntarily and publicly to embed the IAEA recommendations into domestic rules and regulations by signing onto INFCIRC/869.
- States can also choose to commit to a number of recent initiatives that have been opened to the full IAEA membership through INFCIRCs, aimed at further strengthening aspects of nuclear security, including certified training for nuclear security management, supporting nuclear and radiological terrorism preparedness and response capabilities, developing national nuclear detection architectures, ensuring transport security of nuclear materials, mitigating insider threats, strengthening the security of high activity sealed radioactive sources, using forensics in nuclear security and minimizing and eliminating the use of highly enriched uranium in civilian applications.
- States should take full advantage of IAEA advisory services, including the IAEA International Physical Protection Advisory Service and the International Nuclear Security Advisory Service, and through the establishment and implementation of Integrated Nuclear Security Support Plans.

- States that possess nuclear weapons are called on to undertake confidence-building measures, which might include voluntary declarations, reporting in national progress reports or within the framework of Security Council resolution 1540 (2004), applying, where feasible and appropriate, best practices for civilian materials and military materials, or considering bilateral or internal peer reviews without jeopardizing sensitive information. Greater transparency on the part of States with military materials would demonstrate their commitment to strengthening their nuclear security and contribute to greater domestic and international confidence. Sharing information and lessons learned can improve security. It also has a deterring effect, sending a strong message to terrorists that military materials are secured to the highest possible standards.

- States that have not yet done so should become party to the amended Convention on the Physical Protection of Nuclear Material and the International Convention for the Suppression of Acts of Nuclear Terrorism. All States parties to the amended Convention on the Physical Protection of Nuclear Material and the International Convention for the Suppression of Acts of Nuclear Terrorism should implement their obligations thereunder.

- States concerned should further minimize highly enriched uranium stocks and further minimize their use, including by converting radioisotope production to low-enriched uranium fuel and targets or by using other non-highly enriched uranium technologies, taking into account the need for an assured and reliable supply of medical isotopes.

- States concerned should keep their stockpiles of separated plutonium to the minimum consistent with their national requirements.

- States should reinforce their efforts to locate and secure nuclear and other radioactive material out of regulatory control and to improve existing control and cooperation mechanisms with a view to curbing illicit trafficking in nuclear and other radioactive materials. They should consider supporting the work of IAEA regarding the prevention, detection and response to illicit trafficking.

- States should develop and enhance nuclear forensics capabilities and utilize, as appropriate, the support by IAEA, the Global Initiative to Combat Nuclear Terrorism and the Nuclear Forensics International Technical Working Group in areas such as enhancing traditional and nuclear forensics capabilities and providing relevant training assistance to States.

- The work of IAEA in raising awareness of the potential impact on nuclear security of cyberattacks, and the provision of guidance and assistance to its member States in this regard, should continue in view of the growing threat of such attacks.

- Fostering a culture of nuclear security through nuclear security education, training and proper certification of nuclear security managers should be a priority for States and the nuclear industry. Cooperation with IAEA to establish centres of excellence and other nuclear security training and support centres, as well as international nuclear security education networks, is essential.

- States are encouraged to consider participating in the Global Initiative to Combat Nuclear Terrorism.

5. In line with IAEA Nuclear Security Series No. 15, States should establish and maintain effective executive, legislative and regulatory frameworks to detect and respond to criminal or unauthorized acts involving nuclear or other radioactive material that is outside of regulatory control. Establishing and maintaining such frameworks help to ensure that assigned roles and responsibilities are carried out and powers are exercised according to law, cooperatively and in a coordinated manner within a State and, where necessary, between States.

Background note 7: discouraging withdrawal from the Non-Proliferation Treaty

1. Article X of the Non-Proliferation Treaty confers on States parties the right of withdrawal from the Treaty. It sets out the reasons for which the right of withdrawal can be exercised, and the process for exercising it. But this right cannot be considered in isolation. It should be considered in the context of the integrity of the Treaty and the broader framework of international law, including the principle of customary international law that says that a State continues to be responsible for violations of legal obligations committed prior to its withdrawal from a treaty. Abuse of article X would undermine the integrity of the Treaty and the objective of its universality.

2. Withdrawal from the Non-Proliferation Treaty carries inherent risks to non-proliferation and could constitute a threat to international peace and security. Withdrawal from the Treaty is, of course, much broader than discussions in Vienna. Withdrawal is a significant political event and should be given urgent political attention by States parties. States parties held useful discussions on the issue of withdrawal at the 2015 Review Conference, which should be taken forward during the 2020 review cycle, including by developing and agreeing on principles for exercising the right of withdrawal.

3. All nuclear materials, equipment, technology and facilities acquired and developed for peaceful purposes by a State during the time it was a party to the Non-Proliferation Treaty should, in the case of withdrawal, be restricted to peaceful uses only. As a consequence, they should remain subject to IAEA or fallback safeguards.